

Immunization Best Practice

Donna L. Weaver, RN, MN
National Center for Immunization and
Respiratory Diseases



Disclosures

- The speaker is a federal government employee with no financial interest or conflict with the manufacturer of any product named in this presentation
- The speaker will not discuss the off-label use of any product
- The speaker will not discuss vaccines not currently licensed by the FDA

Vaccine Storage and Handling

- Vaccines are fragile and must be kept at recommended temperatures at all times
- Vaccines are expensive
- It is better to NOT VACCINATE than to administer a dose of vaccine that has been mishandled

Cold Chain

- Vaccines must be stored properly from the time they are manufactured until they are administered to your patients
 - Manufacturer to distributor
 - Distributor to office
 - Office to patient

Prefilling Syringes

- Practice **STRONGLY DISCOURAGED** by the National Immunization Program
- May result in vaccine administration errors
- Consider using manufacturer-supplied prefilled syringes
- May consider in situations of heavy use of a single vaccine (e.g., annual influenza clinic)
- Syringes other than those filled by manufacturer should be discarded at end of clinic day

In Summary

- Assign a vaccine manager
- Store all vaccines appropriately
- Monitor and record refrigerator and freezer temperatures twice daily
- Use only certified calibrated thermometers
- Maintain temperature logs for 3 years
- Implement a vaccine emergency system
- Take immediate action for out-of-range temps.
- **DO NOT STORE ANYTHING ELSE** in the refrigerator

Resources

- **CDC Storage and Handling**
 - www.cdc.gov/vaccines/recs/storage/default.htm
- **CA Storage and Handling**
 - www.cdph.ca.gov/programs/immunize/Pages/VaccineStorageandHandling.aspx
- **IAC Storage and Handling**
 - www.immunize.org/printmaterials/viewall.asp#hand

Be Prepared to Administer Vaccines Correctly

- Ensure staff is adequately trained
- Provide current immunization education
- Adhere to OSHA guidelines for employee safety
- Provide staff with easy to use resources and guidelines
- Document immunizations correctly

Avoid Administration Errors

- Wrong schedule
- Wrong vaccine
- Wrong dose
- Wrong diluent
- Inappropriate combinations
- Wrong route
- Wrong site
- Expired vaccine

Produced by
California
Immunization
Branch



Available at <http://www.cdph.ca.gov/programs/immunize/Documents/IMM-508.pdf>

The Right Drug + The Right Diluent

Vaccine + Diluent

ActHIB® + 0.4% Sodium chloride	M-M-R® II + Sterile water
TriHIBit® = ActHIB® + Tripedia	Varivax® + Sterile water
Menomune® + Sterile water	ProQuad® = MMRV + Sterile water
Pentacel® = ActHIB® + DTaP/IPV	Zostavax® + Sterile water

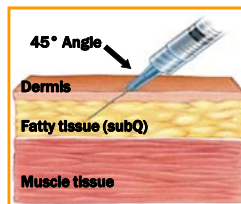
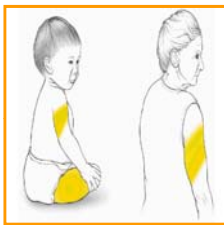
Split or Partial Doses

- Split or partial (incomplete) doses are NOT valid doses
 - Exceptions to partial doses
 - LAIV if person sneezes
 - RV if infant regurgitates, spits out, or vomits

Combining Vaccines

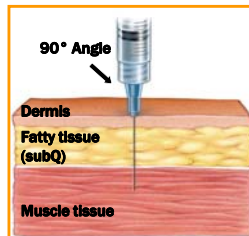
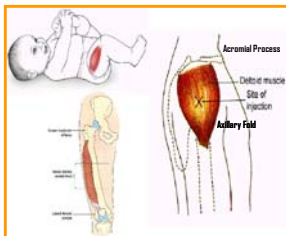
- Vaccines should NEVER be combined in the same syringe unless FDA approved for this purpose

The Right Route & Site Subcutaneous (subQ) Injections



Needle size
23 - 25 gauge
5/8" length

The Right Route & Site Intramuscular (IM) Injections



Needle length & Site depend on:
Muscle size, Fatty tissue thickness,
Vaccine volume, Injection technique
Aspiration is NOT required

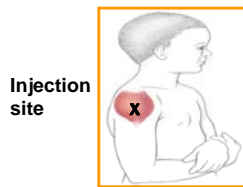
The Right Route & Site Intramuscular (IM) Injections



Needle size - 22 - 25 gauge
Newborn/Premie - 5/8"
Infant (1 - 12 mos) - 1"
Toddler (1 - 2 yrs)
Anterolateral thigh - 1" - 1 1/4"
Deltoid - 5/8" - 1"

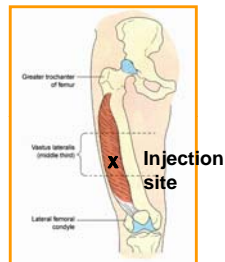


The Right Route & Site Intramuscular (IM) Injections



Injection site

Needle size
22 - 25 gauge
Children/Adolescents (3 - 18 yrs)
Deltoid - 5/8" - 1"
Anterolateral thigh - 1" - 1 1/4"



The Right Route & Site Intramuscular (IM) Injections

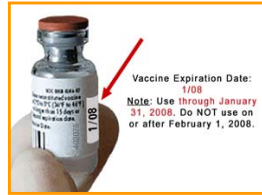
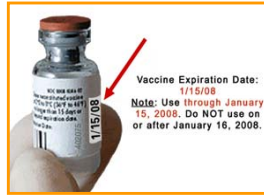


Sex/ Weight	Needle Length	Injection Site
M & F <130 lbs	1"	Deltoid Muscle
F 130 lbs - 200 lbs	1" - 1 1/2"	
M 130 lbs - 260 lbs		
F >200 lbs	1 1/2"	
M >260 lbs		



*Some experts allow for use of a 5/8" needle

Check the Expiration Date



Multiple Vaccinations

www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/D/site-map.pdf

- Use the thigh for multiple IM injections in infants and young children
- The deltoid muscle can be used for older children and adults
- Separate each injection by at least 1"
- Administer vaccine and immune globulin at separate sites
- Combination vaccines can reduce the number of injections needed

Muscle	Volume Injected	
	Average	Range
Deltoid	0.5 mL	0.5 - 2 mL
Vastus lateralis (anterolateral thigh)	1 - 4 mL	1 - 5 mL

In Summary

- Involve staff in selection of vaccine products
- Orient new staff to vaccines and validate their knowledge and skills about vaccine administration
- Train all staff on use and administration of new vaccines
- Keep current reference materials available on each vaccine
- Rotate vaccines with the shortest expiration dates in the front and remove and discard any expired vaccines
- Label storage containers or baskets with the age indications for each vaccine
- Keep reference sheets for timing and spacing, as well as recommended sites, routes, and needle lengths posted for easy reference in your medication preparation area
- Administer only vaccines that you have prepared for administration
- Triple check your work BEFORE you administer a vaccine and ask other staff to do the same
- Counsel parents and patients on vaccines to be administered and the importance of maintaining immunization records on all family members

Reporting Vaccine Administration Errors

<http://www.ismp.org/reporterrors.asp>



Syncope

MMWR 2008;57 (No. 17):457-60

- 463 syncope (fainting) reports to the Vaccine Adverse Event Reporting System (VAERS) between 2005 and 2007
- Rate almost doubled since 2004
- Injury following syncope a public health concern
- 76% of serious syncope VAERS reports occurred among adolescents
- Life-threatening injuries, head trauma, and one fatality
- Have patients seated for vaccination
- Strongly consider observing patients for 15 minutes after they are vaccinated
- If syncope develops, patients should be observed until symptoms resolve

Resources

- CDC Vaccine Administration
 - www.cdc.gov/vaccines/recs/vac-admin/default.htm
- CA Vaccine Administration
 - www.cdph.ca.gov/programs/immunize/Pages/ImmunizationTechniquesandPractice.aspx
- IAC Storage and Handling
 - www.immunize.org/printmaterials/viewall.asp#services
- IAC Needle Safety
 - www.immunize.org/needlesafety/

**Immunizations Are a Measure of Office
System Quality**

- Increasing immunization rates often increases other preventive services (e.g., lead screening)

**2007
National Immunization Survey**

Antigens	United States	South Carolina
4:3:1:3:3:1	77.4	79.5
4 + DTaP	84.5	84.2
3 + Polio	92.6	91.1
1 + MMR	92.3	92.5
3 + Hib	92.6	91.8
3 + Hep B	92.7	92.1
1 + Var	90.0	91.5
3 + PCV	90.0	92.1
4 + PCV	75.3	80.8

**You Cannot Fix What You Do Not
Recognize as a Problem**

- Immunization providers often do not know the vaccination levels in their practices
- Providers overestimate coverage in their office by $\geq 10\%$
- Knowledge of actual vaccination coverage level leads to positive interventions

Bordeley et al. Pediatrics 1996;97:467-73

How To Measure Your Office Rates

- Use the SC immunization registry
- Use CoCASA
- Simply check 10 charts

Increase Demand

- Recommend the vaccine
- Use client reminder/recall systems
- Use multifaceted programs including education
- Support regulations (eg, school entry requirements)

MMWR 1999;48(RR-8):1.

When All Else Fails

www.cisimmunize.org/pro/pdf/RefusaltoVaccinate_revised%204-11-06.pdf

Use Multifaceted Programs Including Education

- Display posters and brochures about childhood immunization in waiting rooms/ reception areas
- Post the schedule in waiting rooms in a simple, understandable format
- Provide shot record for parents
- Discuss changes in the schedule and the importance of keeping children up to date on their immunizations
- Encourage parents to know their child's immunization status, to keep the child's record up to date and in a safe place, and to bring it to every visit

Enhance Access

- Reduce cost
 - Provide VFC vaccine
- Expand access
 - Extend office hours
 - Host special weekend or evening clinic hours (especially important for influenza)
 - Provide walk-in immunization services (no appointment required)
 - Provide info on transportation services
 - Couple with other programs (e.g., WIC settings)

Address Provider Barriers - Start by Clarifying the Immunization Schedule

- Get all providers to use a single current immunization schedule
- Post the schedule in exam & med rooms and at the scheduling desk
- Everyone should carry a laminated pocket copy of the schedule

**Address Provider Barriers -
Rid Your Office of
Missed Opportunities**

- Vaccinates only at well care visits
- Gives only 2 shots/ visit
- Uses invalid contraindications
(minor illness, antibiotic use, etc)
- Doesn't know what shots are due at the
time of the visit (immz record
problems)
- Forgets or makes an error!

Resources

- Immunization Schedules
www.cdc.gov/vaccines/recs/schedules/default.htm#adult
- Contraindications & Precautions
www.cdc.gov/mmwr/PDF/rr/rr5515.pdf
- Standing Orders
www.immunize.org/standingorders/
- Immunization Works CD
www.cdc.gov/vaccines/recs/vac-admin/rev-immz-stds.htm

**National Center for Immunization and Respiratory
Diseases
Contact Information**

- Telephone 800.CDC.INFO
- Email nipinfo@cdc.gov
- Website www.cdc.gov/nip
- Vaccine Safety
 www.cdc.gov/od/science/iso/
